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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants: Cassondra L. Crotty et al.   : Art Unit: 2672

Serial No.: 09/224,696   : Examiner: Chante E. Harrison

Filed: January 4, 1999   : Confirmation No.: 3386

For: METHOD FOR   :

            VISUALIZING DATA   :

TECHNICAL DECLARATION

Assistant Commissioner for Patents

Washington, D.C. 20231

SIR :

I, Daria R. Dooling declare that:

1.   I am one of the inventors named in the above-identified patent application.

2.   I am an Advisory Software Engineer at IBM Corporation and have held my current position since 1995. Included in my responsibilities are software support for product engineering activities that transform chip designs into manufacturable products. This entails distributed numerical methods for failure analysis and yield analysis, and parallel shapes processing of the design for manufacturability purposes. Previously, my responsibilities included system code, such as database managers and network code, for a manufacturing a logistics system.

3.   During my 17 years of employment by IBM Corporation, I have had significant experience with network applications, databases, numerical systems, graphical (shape) processing, and parallel systems. My experience with modeling, manipulating, and solving sparse matrices as part of the chip analysis work, is particularly relevant to the

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technical and patentability issues that have arisen in the prosecution of the above-identified patent application and the subject matter of this TECHNICAL DECLARATION.

    4.   I received a Bachelor of Science in Computer Science with a minor in Mathematics from St. Joseph's University. I received a Master of Science in Computer Science from the University of Vermont.

    5.   I have made the following presentations and co-authored the following papers:

Distributing the Extended Psi Function for the Condition Number Estimator Algorithm, Dooling - Masters Thesis 1995

Parallel Analysis of Integrated Circuit Power Distribution Networks, Ditlow, Dooling, Gupta, Moore, Moran, Wilkins, and Williams - Ninth SIAM Conference on Parallel Processing for Scientific Computing 1999

Integrated Manufacturing and Development IMAD, Ditlow, Dooling, Moran, Wilkins, and Williams – SuperComputing 1999

Parallel Domain Decomposition for Integrated Circuit Design, Dooling, Moran, and Williams – SIAM Computational Science and Engineering Conference 2000

An Algorithm to Manage Computer Resources, Dooling, Moran, and Williams – SIAM Computational Science and Engineering Conference 2000

    6.   The first two presentations and papers are particularly relevant to the technical and patentability issues that have arisen in the prosecution of the above-identified patent application and the subject matter of this TECHNICAL DECLARATION.

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7.   I have been recognized for my accomplishments in the following ways:

Chairperson of the *Domain Decomposition* session of the 2000 SIAM Computational Science and Engineering Conference.

IBM Achievement award in 1988 for contributions to a dealer commission system.

IBM Invention Plateau award in 1999 for four patent application filings

Best Poster award (paper without presentation) in 1999 at the Ninth SIAM Conference on Parallel Processing for Scientific Computing for *Parallel Analysis of Integrated Circuit Power Distribution Networks.*

8.   I am identified as an inventor in two issued U.S. patents and four pending U.S. patent applications, including the above-identified patent application. The U.S. patent most relevant to the technical and patentability issues that have arisen in the prosecution of the above-identified patent application and the subject matter of this TECHNICAL DECLARATION is U.S.5,878,424 *Method and Apparatus for Indexing Patterned Sparse Arrays for Microprocessor Data Cache.* This U.S. patent is relevant in terms of my familiarity with sparse arrays and knowledge of state-of-the-art methods for operating on them.

9.   I am familiar with and understand the contents of the above-identified patent application and the contents of U.S. 6,222,547 to Schwuttke et al.

10.   Schwuttke et al. relates to a three dimensional picture of a space. The system of Schwuttke et al. is a "situation visualizer" that can function in one - (linear), two - (area), or three - (volume) dimensions. This situation visualizer draws the attention of the eye of the user to some activity

of interest at one or more various points within the three dimensional picture of the space.

11.   Applicants' invention relates to the mathematical representation of a problem. Applicants' invention, in clear contrast to Schwuttke et al., deals with the visualization of the mathematical representation, in grid or matrix form, and not in cyberspace, of a mathematical expression.

12.   A mathematical representation of a problem (i.e., Applicants' invention) is different from a three dimensional picture of a space (i.e., Schwuttke et al.). The purpose and function of Applicants' invention is different from the purpose and function of Schwuttke et al.

13.   Applicants' grid, that is generated as a direct result of data values rather than data values being located in the grid subsequent to formation in an arbitrary manner as in the Schwuttke et al. grid, is different from the Schwuttke et al. grid which is the result of an arbitrary division of cyberspace into smaller spaces that is not based on a plurality of data values, although data values are subsequently located within the grid.

14.   I have been informed by Andrew L. Ney, attorney for Applicants, that the Examiner has acknowledged that the purpose and function of Applicants' invention and the system of Schwuttke et al. are different. In order to understand what is disclosed by Schwuttke et al., one must take into consideration these differences in function and purpose between Applicants' invention and the Schwuttke et al. system.

15.   The claims under rejection call for generating a grid as a direct result of data values. The system disclosed in Schwuttke et al. does not generate a grid as a direct result of data values. Claims 1, 2, 5, 6, 9, 13, and 14 each call for "generating a grid based on a plurality of data values." Claims 3, 7, 11, and 15 each call for "extracting a plurality of data values associated with a mathematical matrix to generate a geometric representation.

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16.   The statement by the Examiner, with respect to Schwuttke et al., that

> "each block represented in a column of FIG. 5A represents a grid that corresponds to a category of data having a plurality of associated nominal values. Additionally, a grid is only generated in each block where data is represented"

fails to support the Examiner's contention that the system disclosed in Schwuttke et al. generates a grid as a direct result of data values. In order to *enter* data in a grid, as the Examiner acknowledges takes place in Schwuttke et al., the grid must exist beforehand for the data to be *entered*, which means that the grid in Schwuttke et al. is <u>not</u> generated as a direct result of data values.

17.   In Applicants' invention:

(a)   as defined by claims 1, 2, 5, 6, 9, 13 and 14, <u>the grid is generated as a direct result of data values</u>, rather than data values being located in the grid subsequent to formation, in an arbitrary manner, of the grid as in Schwuttke et al., and

(b)   as defined by claims 3, 7, 11, and 15 <u>the mathematical matrix</u> in Applicants' invention is <u>generated as a direct result of data values</u>, rather than data values being located in a matrix subsequent to formation, in an arbitrary manner, of the matrix as in Schwuttke et al.

18.   By stating "Schwuttke distinctly discloses (col. 6-7 et seq.) the grid being formed as a result of object classification," the Examiner has not identified a disclosure in Schwuttke et al. of Applicants' invention as defined by claims 1 through 3, 5 through 7, 9, 11, and 13 through 15.

19.   Schwuttke et al. does not disclose that a grid is defined only after data has been entered into the space occupied by the grid at

selected locations in this space, so that the grid is defined at the time the data is being entered as in Applicants' invention. In the Schwuttke et al. system, as in other prior art grids, the grid is defined at locations within the coordinate system whether or not data has been entered. In the present invention, the grid is defined only at coordinates where the data is located.

20.   The portions of Schwuttke et al. cited by the Examiner (col. 6-7, ll. 8 et seq.; col. 6, ll. 29 et seq.; col. 6, ll. 63 – col., ll. 35; col. 7, ll. 3-5; col. 7, ll. 10 et seq.; col. 7, ll. 20 et seq.; FIGS. 2 and 4-7; col. 10, ll. 35 et seq.; col. 7, ll. 29-35; col. 8, ll. 52 et seq.; col. 5, ll. 37 et seq.;) neither disclose nor suggest:

(a)   "generating a grid based on a plurality of data values" as called for by claims 1, 2, 5, 6, 9, 13, and 14 or

(b)   "extracting a plurality of data values associated with a mathematical matrix to generate a geometric representation" as called for by claims 3, 7, 11, and 15

and the Examiner has not pointed out where, in Schwuttke et al., there is a disclosure or suggestion of such features. General statements, such as "Schwuttke distinctly discloses (col. 6-7 et seq.) the grid being formed as a result of object classification" and "Schwuttke et al. and the present invention function the same in that both define a grid where the data is entered," do not indicate to one skilled in the art that Schwuttke et al. discloses: (a) "generating a grid based on a plurality of data values" as called for by claims 1, 2, 5, 6, 9, 13, and 14 and (b) "extracting a plurality of data values associated with a mathematical matrix to generate a geometric representation" as called for by claims 3, 7, 11, and 15.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the

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United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

Respectfully submitted,

Daria R Dooling

Daria R. Dooling

_June 11_____, 2002

The Assistant Commissioner for Patents is hereby authorized to charge payment to Deposit Account No. 09-0456 (IBM Corporation) of any fees associated with this communication.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231 on:

June 12, 2002

Patricia C. Bonella